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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,767	05/24/2005	Yoshio Bando	2005_0079A	2682

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WENDEROTH, LIND & PONACK, L.L.P.  
2033 K STREET N. W.  
SUITE 800  
WASHINGTON, DC 20006-1021

EXAMINER
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MASLOVA, OXANA

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 11/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/521,767

Applicant(s)

BANDO ET AL.

Examiner

Oxana Maslova

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 May 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/19/2005, 4/13/2005</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. The specification and claims appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors. For example, "a subject to be measured in the air".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. It appears that the omitted essential steps are: according to specification in order to operate the temperature sensing element properly, there should be a heating step, during which the volume of the gallium is expanded, and a step in which the gallium is oxidized in the presence of air to produce gallium oxide which is firmly bonded to the nanotube. Without these two steps, the method for measuring the temperature as claimed in claim 1 appears to be incomplete.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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4. Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by *Gao et al* (Nature (London) 415,599 11/25/2002)(hereinafter Gao).

5. Gao discloses a carbon nanothermometer/method for measuring the temperature using a minute size temperature sensing element, as a temperature sensing element comprising a carbon nano tube with a continuous columnar gallium contained with one end opened (to fill up the tube with gallium there should be at least one open end. Also, since there is no indication that the open end was closed after the filling, it is assumed that the end remained open) and the other end closed (the other end of the tube should be closed in order to keep the liquid gallium inside), characterized in comprising the steps of measuring the gallium length by a transmission electron microscopy (col.2 lines 4-7) in different temperature environments (col.1 lines 16-18).

Gao discloses that the nanothermometer should be suitable for use in a wide variety of microenvironments, which in a broad sense could be interpreted as requiring inserting the nanothermometer into the microenvironment being tested and taken out from the microenvironment to be measured by the TEM.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods. Kiang (US 2001/0051367 ) discloses molecular nanowires from single walled carbon nanotubes, Gradishar (3,688,582) discloses thermometric devices, S.Boyer (1,793,303) discloses temperature responsive device.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Oxana Maslova whose telephone number is 571/ 272-6532. The examiner can normally be reached on 8:30 to 5:00 ET.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 517/273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**Diego Gutierrez**  
**Supervisory Patent Examiner**  
**Technology Center 2800**

*Patent Examiner*

*Supervisory Patent Examiner TC2800*

October 27 2006

... applications.